Octob 1860

Nelumbium Seed

The seed includes 2 large ~~fleshy~~ thick farinaceous cotyledons, connected at the upper end ~~with~~ by an extremely short radicula

The Cotyledons include ~~a~~ very large plumula consisting of stem and two leaves the petioles of which are bent upon themselves

Plumula green, with dark spots.

Stem with 7 tubes, ~~the lowest~~ 4 on the side of the lowest leaf, 3 on the side of the second one so that on one end the pair is on the side of the former and the odd one opposite on the side of the second.

Cotyledons with their edges parallel to the radius of the torus (or ~~with the~~ with its back toward the periphery or apex of torus)

first leaf directed towards the periphery (or the periphery of torus)

second leaf opposite the first.

first leaf: ~~including the~~ base of its petiole without stipules but with a distinct margin (dilatation) including (not with a stipule) or surrounding the base of the next internode.

second leaf with a regular stipule which includes a third opposite leaf and the stipule of this one includes a fourth again opposite leaf, regularly stipulated, like the two previous or lower ones

Only the lowest one with a mere trace of a stipule.

The lowest leaf has no stipule because it is less fully developed

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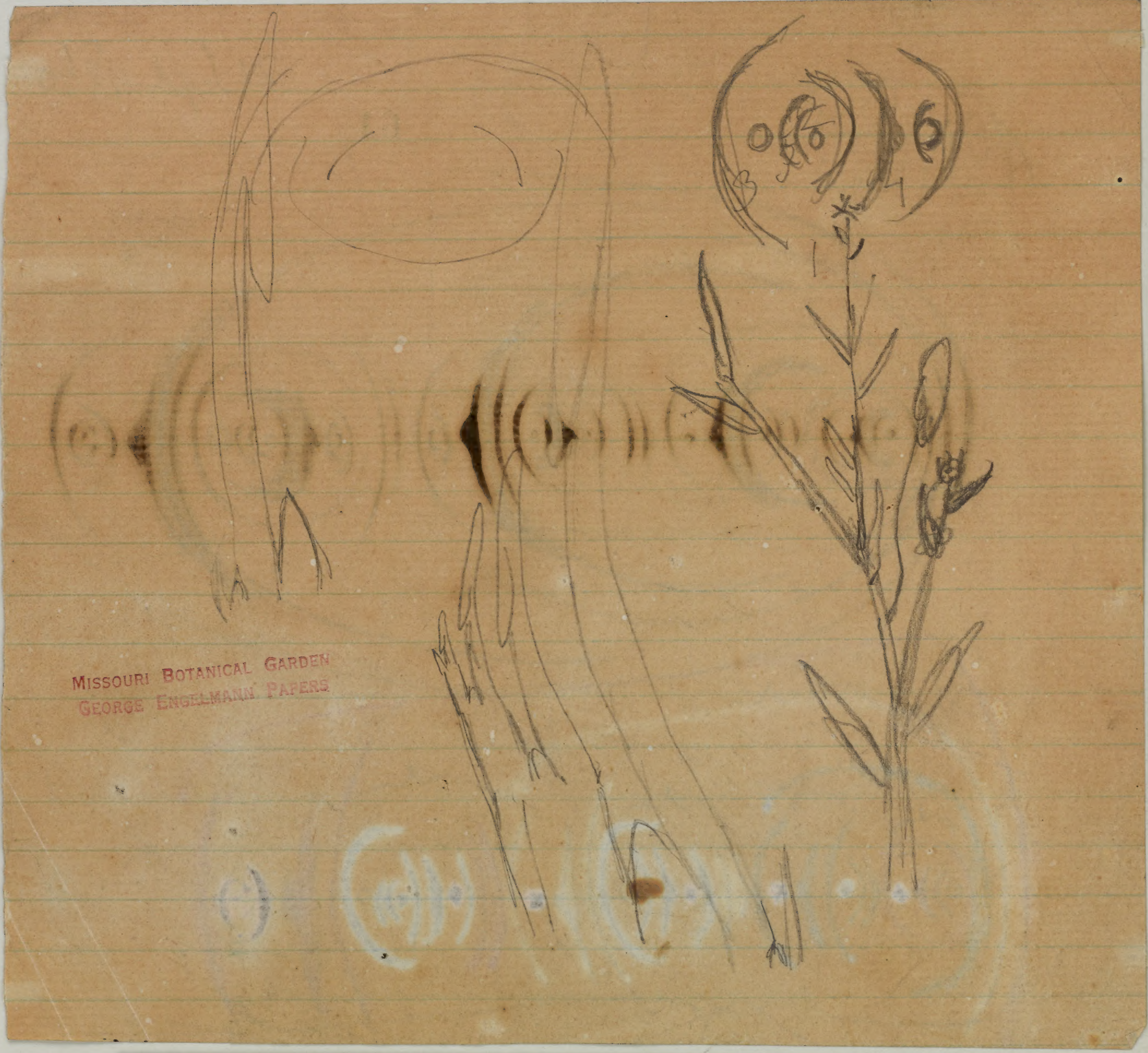

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The stem continues above the node (which produces two semicircular bands of rootlets, separated by 2 linear naked spaces) producing or median like

c, dd enveloping bract, its back turned to the lower side of stem if that it inclined, the back thinner than the sides, and soon splitting in two, formerly apparently two lateral bracts (c is = h. g and is in different of them degrades)

d. dorsal bract of leaf, opposite or ½ to the last, not split, always at base of petiole (in the diagram it is found under the designation i n. d v

f. folium, the true leaf, ½ with the bract, ½ with circular blade, when young the blade is erect, and rolled in from both sides towards the ventral side; the petiole has 2 small channels on the dorsal side 2 large ones laterally and 2 small higher ones towards the ventral face. — (In the diagram it appears as K, S and W

s. Stipular bract, ½ with the leaf, f; thin back, and soon split into two like e, base connate with leaf, and the whole like a stipule

(In tab 18, fig 3 the bases of both petiole of f, which it probably is; d and s united with the so as to form one organ,

62

st. continuation of stem.

bd bud, appearing between the system of the bracts (properly speaking, inside of s) and the continuation of the stem,

l lowest basal bract at base of bud, opposite s (otherwise marked n) seen only once and doubtful. See below, other page;

b basal bract, at base of branch; (also

(in some diagrams marked O) appearing at the lower end of the internode. At its upper end appear the two semicircles of rootlets or their warts and above them the bracts e, d, the leaf f. etc. The bracts b & b. are conform & b & also soon becomes bifid. —

e' is the repetition of e and opposite to it and to b.

d' f' s' $\frac{1}{2}$ to é and conform r/i among themselves.

b. & b in sections of young buds (see tab 11 & 18) there are always two bracts, conform or r/i the exterior never covering the bud, the interior one overlapping, both turned with the back to the continuation of the stem, which seem to be b and b

s is enveloped and the continuation of stem (see tab 17 fig 1) closely above but more loosely lower down (cb. fig 3) to make room for the bud — fig 3 it is separated both from the leaf and the stem but in tab 18 fig. 1 it is close to the leaf and in fig 3 attached to it.

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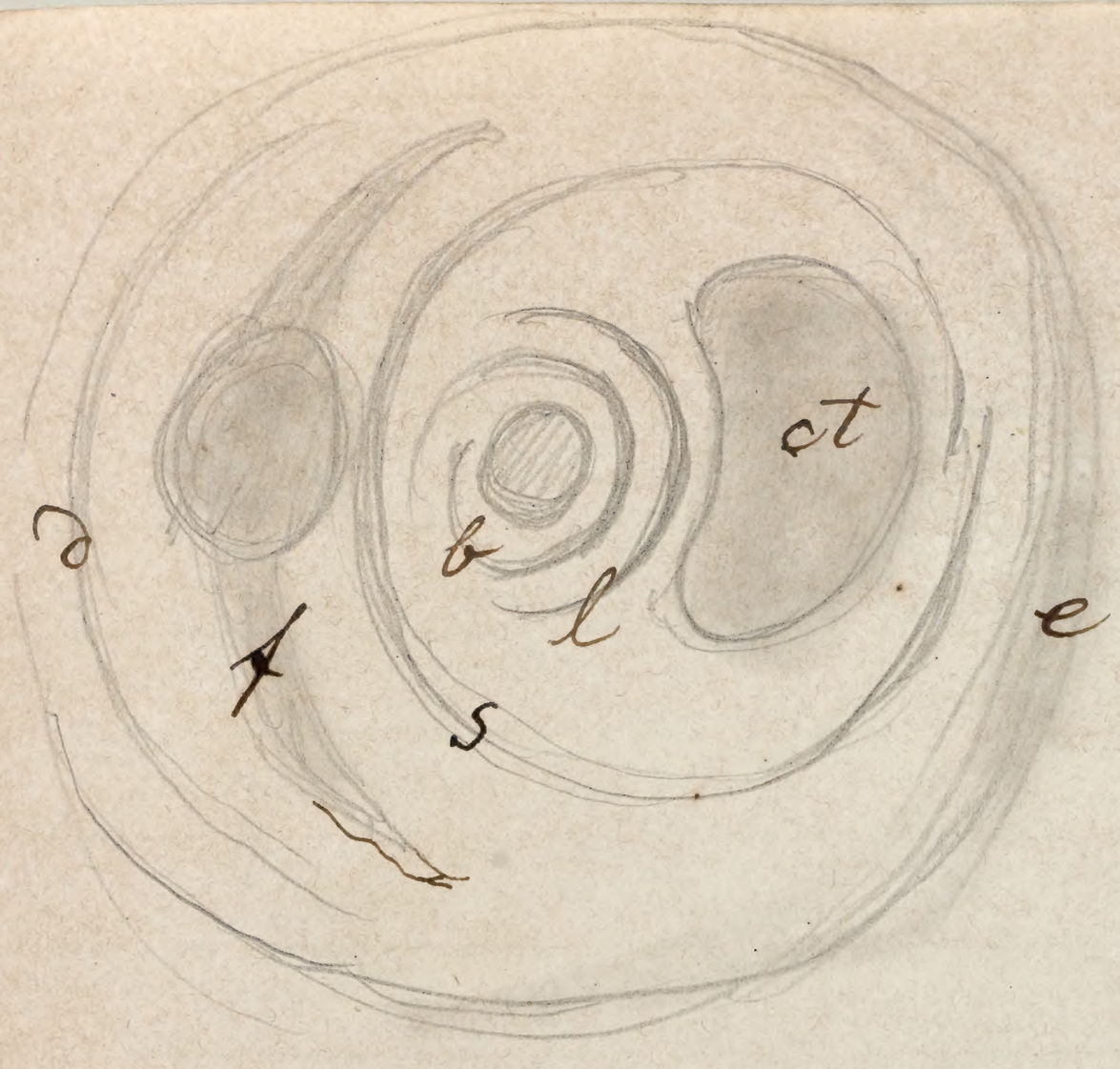

diagram of bud of fig 10
see section at fig 11
corresponds exactly with
diagram of fig 19. (only reversed)

diagram of bud, left side of
fig 16 (section of fig 18)
this bud is the same as ct in fig 19
and in the diagram

The sections fig 17 show that
the bract s, though upwards closely
enveloping the leaf with its bracts
and the young stem, lower down
is separated and bears a bud
in the axil

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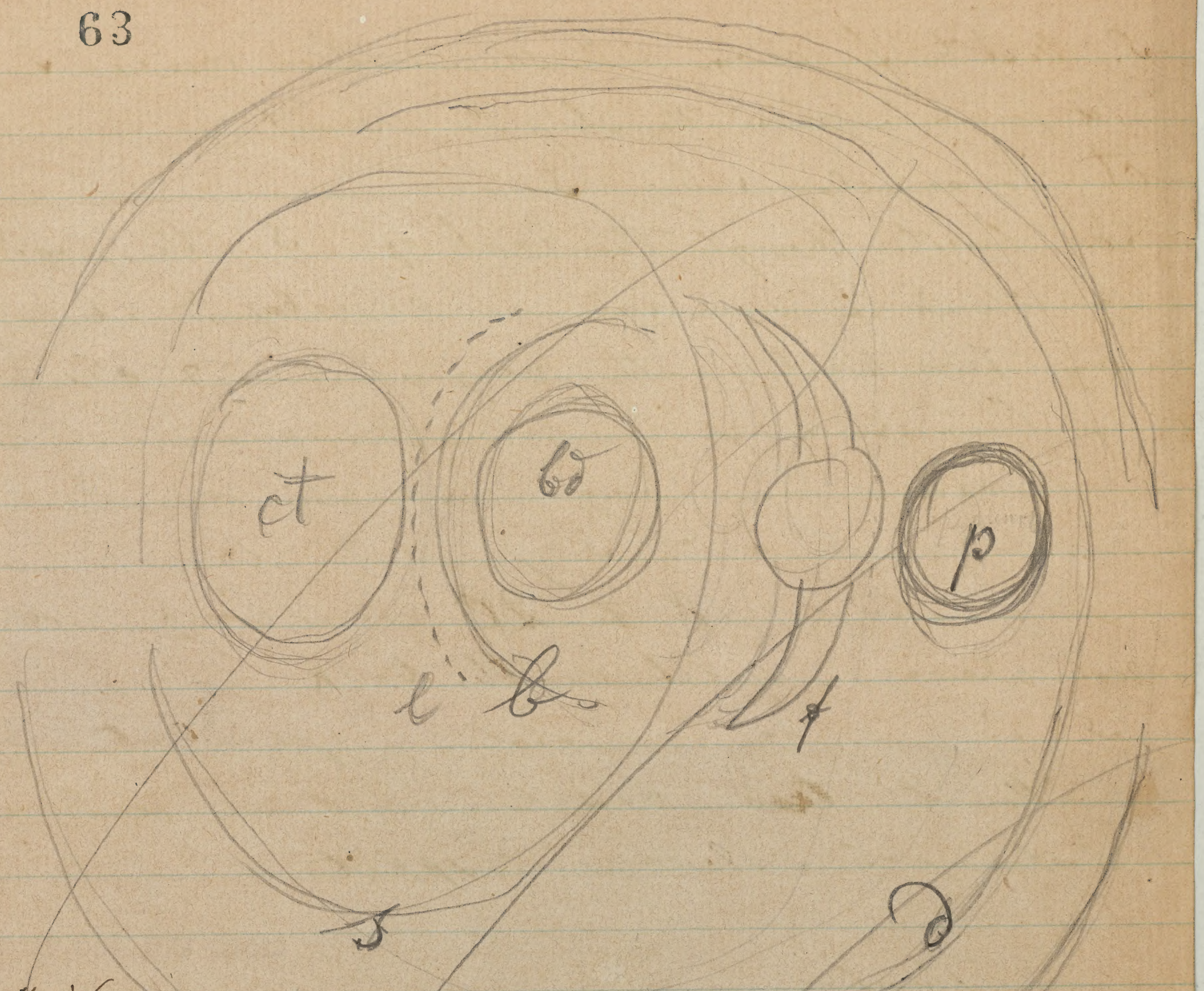

Sept 16th 1860

e is 2-3 inches high in large fully developed stem

e envelopes the whole bud, its middle opposite the flattened upper side of the stem, it therefore lies under the horizontal stem. At the ontinuation of the stem soon penetrates its back, containing the horizontal direction of the stem, and very soon it is slit in two and both halves become lateral, and erect.

d. opposite to e is the florigerous bract. shorter 1-2 inches high. it envelops the base of pedicle (p) or of petiole (f) where no flower is developed.

f is the same direction, back turned to pedicle, but petiole, where there is a pedicle, channeled on the back, below, where it touches it and channeled on the ventral side higher up, where the natural structure can prevail unhampered. The backside of petiole is always marked by the 2 smallest of the 6 tubes.

over

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S. Next to f, always in the same direction comes S, which
I formerly called the stipular bract.
ct is enveloped by S
bd bursts through the back of S. the production
of which it is and is enveloped at base
by two bracts, the very short & obscure
(ci about 4 lines long rounded and
broader than long) easily overlooked
between b and S, and b.
b ci about 18 to 20 lines long often, but
not always split on the back
S ci, as has been stated, penetrated by bd
with its two basal bracts, and ci often
but not always split.

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Therefore
e is penetrated by ct and in the course of their
growth by all the other organs and invariably almost
split in two; its adhere halves to the petiole
S is penetrated by the bud and its basal bracts both
and often but not always split; it is
adherent to the continuation of the stem, ct, on
the upper side of which it lies or on both its lateral sides
if split.
b is often split but not always, and adheres
to the lower side, or if split, laterally to
the bud
l remains unaltered, but seems to be always
a little one sided.

l & b are ⅄ with e & e' and all three are opp. or ½
with d. f. & s

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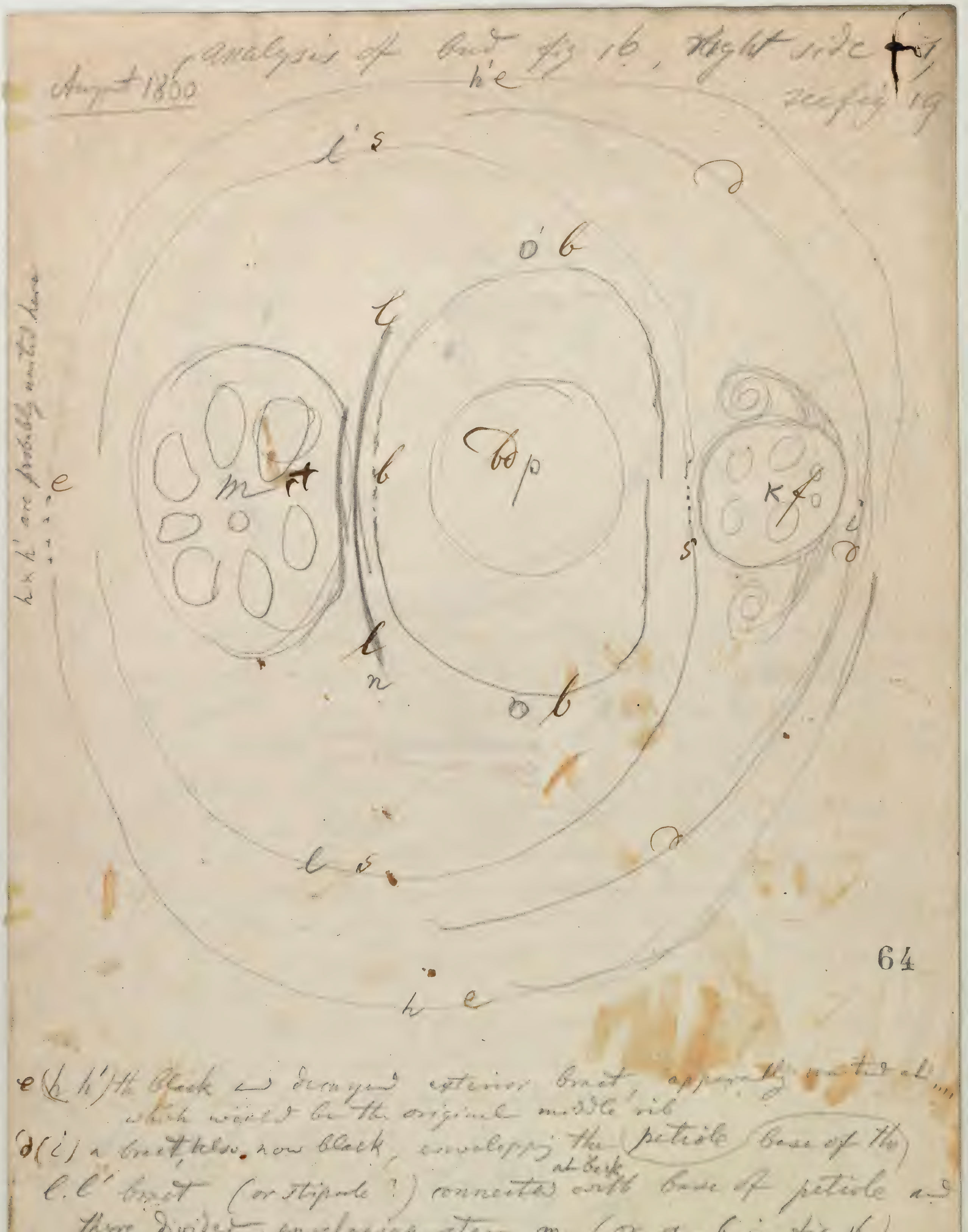
Analysis of bract fig 16. Right side



e (h h') the black & serrated exterior bract, apparently a stipule, which would be the original nectar bearing

d (i) a bract below, now black, enveloping the petiole (base of the l. l' bract (or stipule?) connected with base of petiole & three divided enveloping stem m (or n-6 ÷ fig. 16)

The bract l l' is the same as fig 11, c, also represented ÷ fig 11 & 18. especially ÷ 12 ver. true it is opposite & at first view it is united with the petiole

ft (m) thickened stem (= n-6 ÷ fig 16

t (m) very short bract t/2 or at most 2 lines long, obtuse enveloping with the base of

b (b-b') the larger white membranous bract (6 lines long, cleft for about 1/2 of its length

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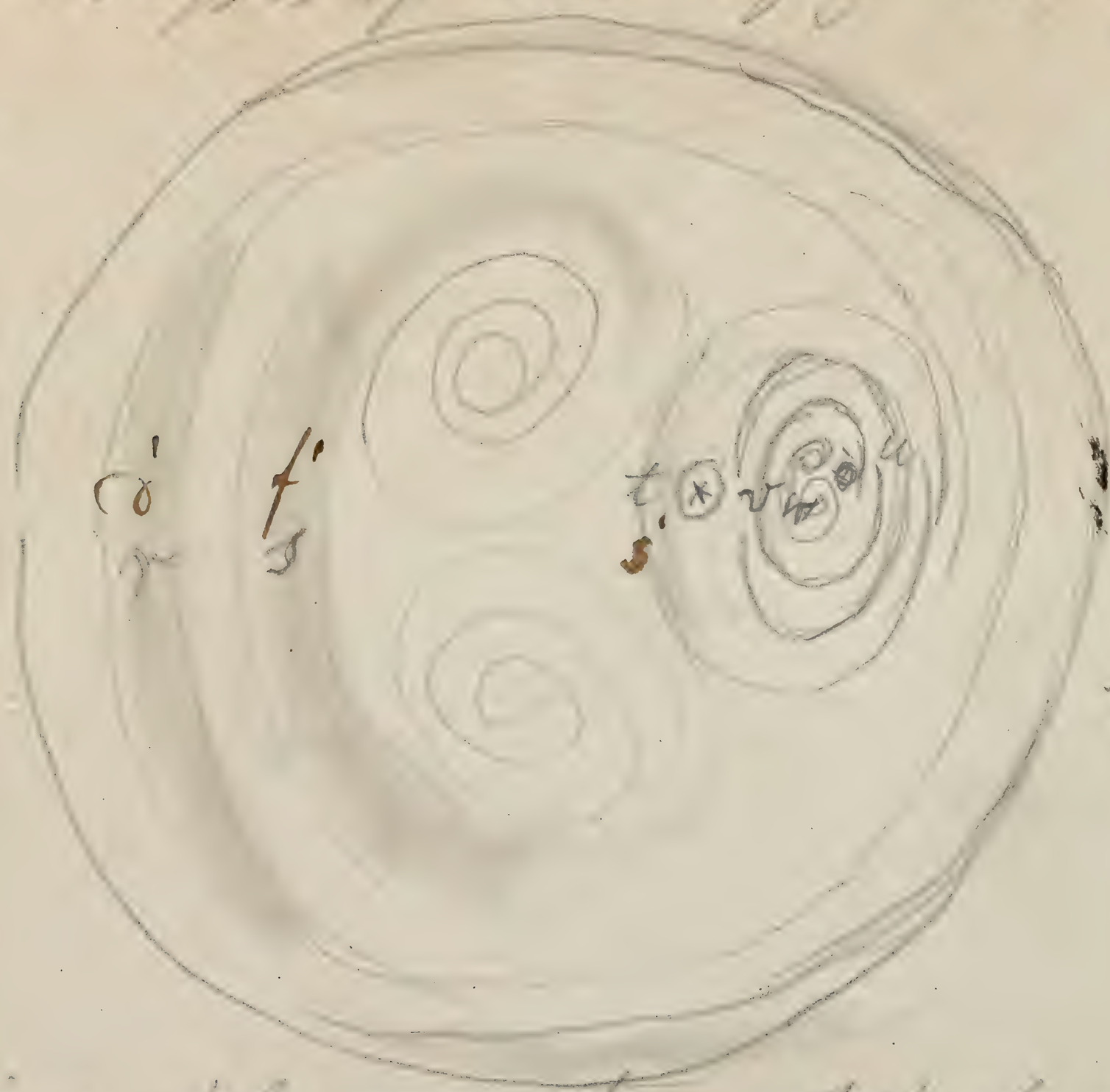
Analysis of Beet Fig 16 Dupetit Thouars

2



Cut

R is a short young stem which at its upper end shows already the shoot tetrastichy, from which the roots are to grow. These roots form 2 semi-circles, separated before and backed by a bottleless bike (see figs 10, 16 & 19

e g. is the Coarse Bract on that stem, just above the circle of roots; corresponding with the bract to. it is greenish here with brown at the top and resemble leaves in it is thinner on the back than on the sides, and the nibs were distant there before it is going to separate into two halves the latter being

d' x bract, opposite g and enclosing it. edges overlapping (which g never does that) — x is 10 C. long

f' s. a bract, now completely hidden in the bract x

g' t small bract at the base of petiole enclosing it

it bract t i.e. $\frac{1}{1}$ arranged with bract x in axil

e" w another similar bract enveloping t

d" v another bract enveloping t w

f" w. bract enclosing t bract.

g x bract in axil of t

et x' bract in axil of w. or rather continuing branch

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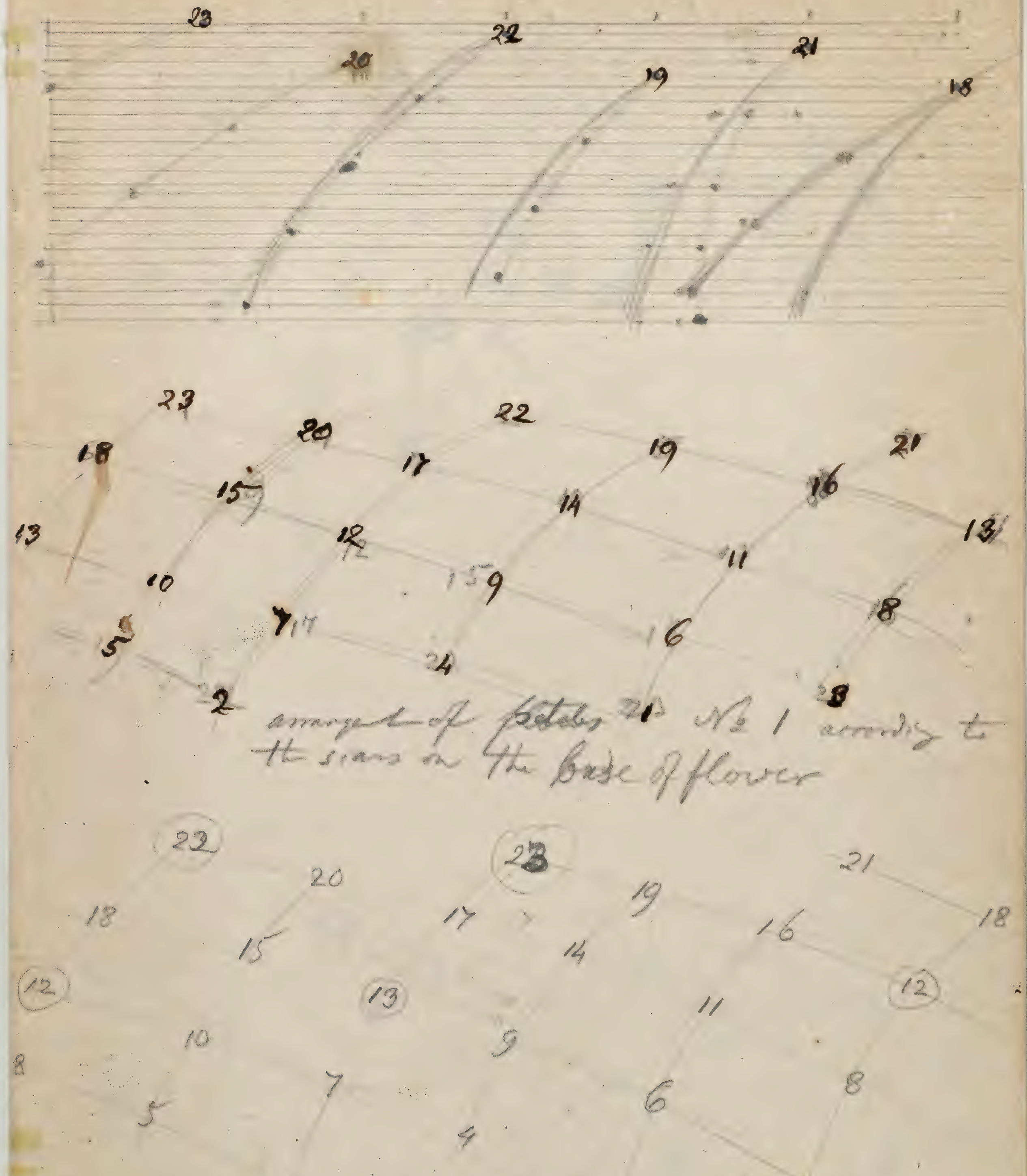
arrangement of petals No 1 according to the scars on the base of flower
arrangement of petals according to ordination
(it will be observed that 12 & 13 & 22 & 23 are transposed)

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2nd Power

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Imaginary Diagram

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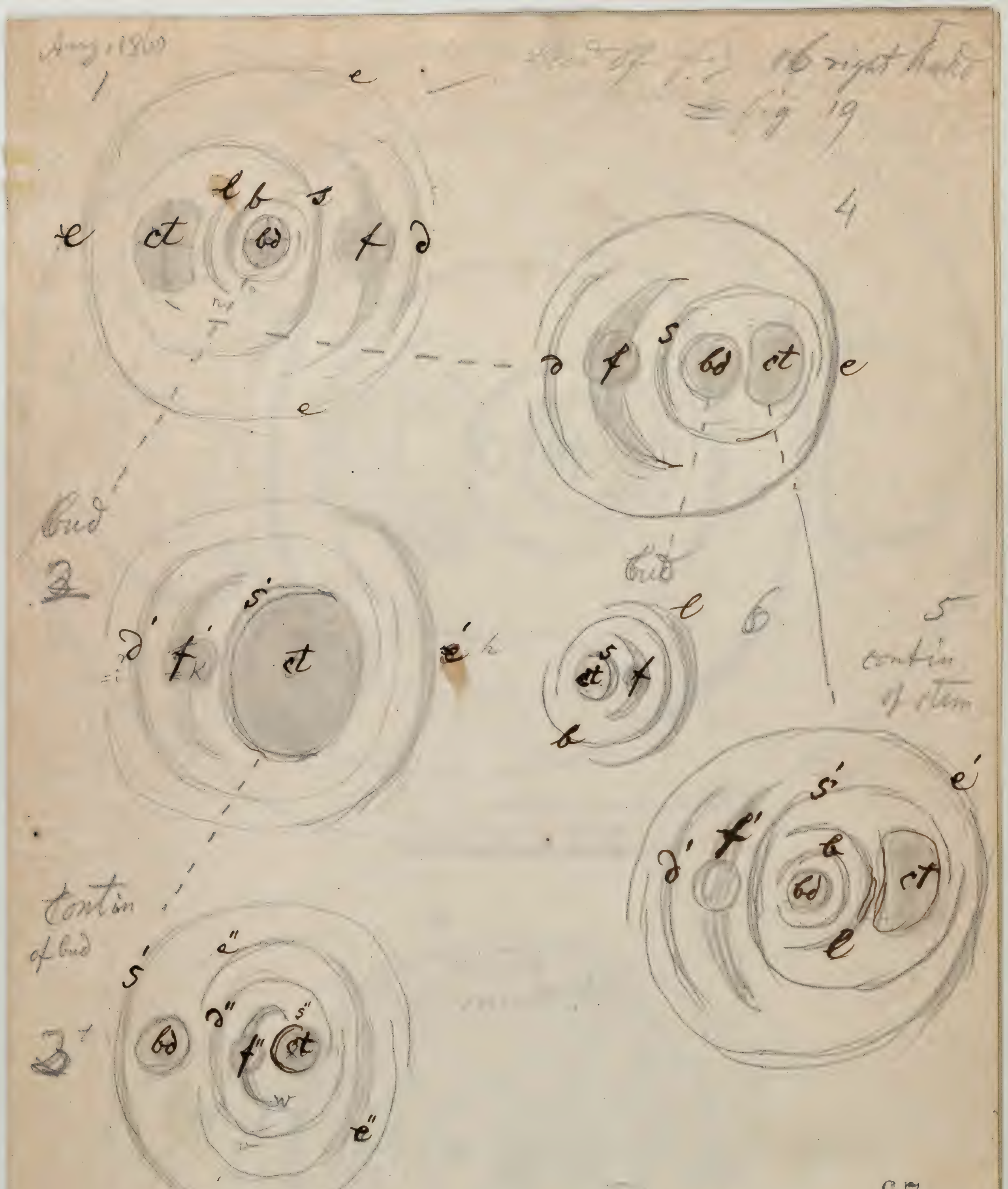
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e
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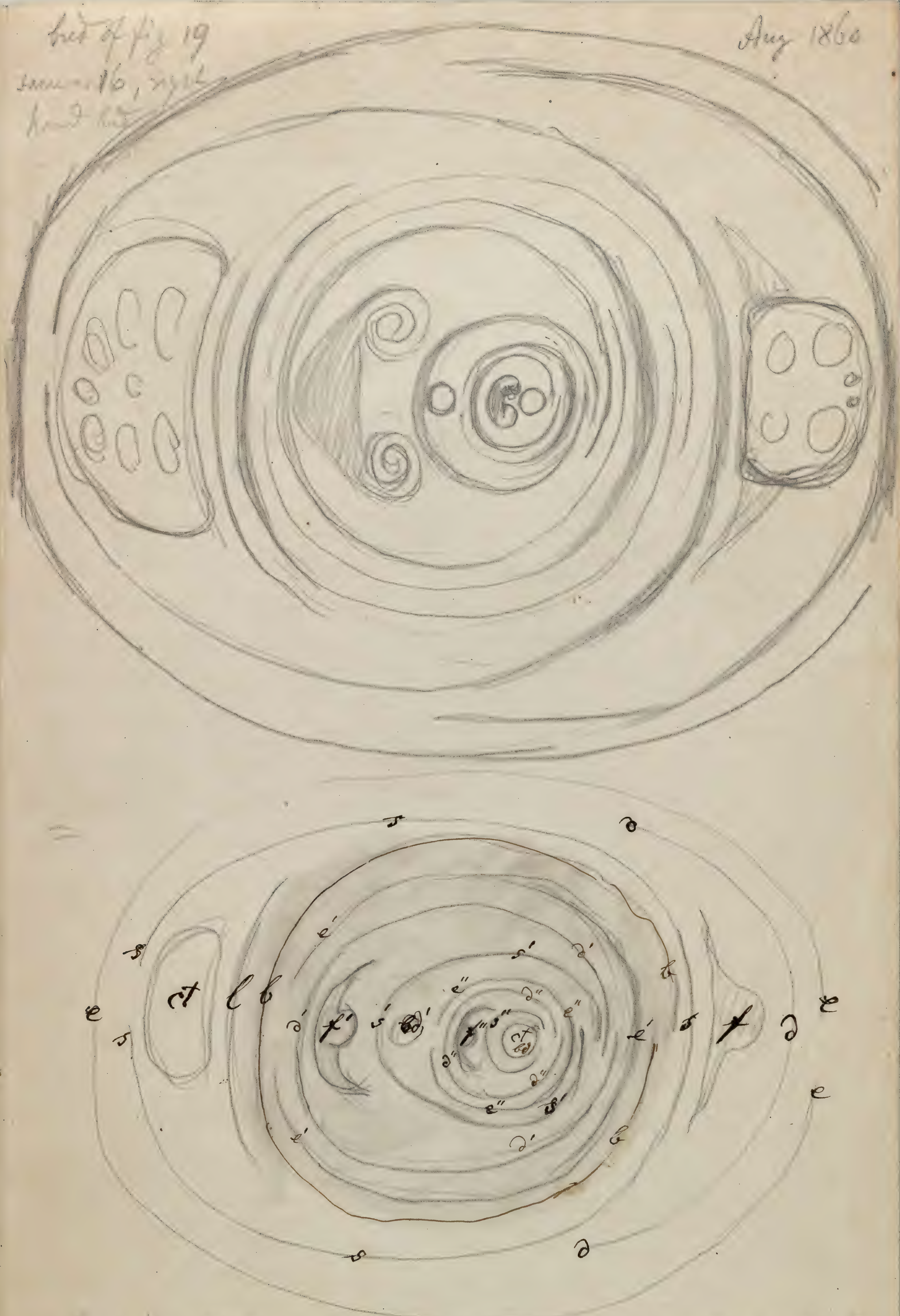

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Diagram of the 3rd form found in Fig 20 - 2

All the lines ghosted within carefully drawn after nature

or Thus, Tilt each of these solid lines diagrams represents one node

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Velumbdam

Arrangement of Carpels in 2 and 3 cycles, 9-15 ÷th outer, 3-11 ÷th inner 0-5 ÷th innermost cycle

12 carpels	9.3.
13 "	9.4.
14 "	10.4 — 10.4
15	
16.	11.5 — 11.5
17.	11.5.1.
18	
19	
20	12.7.1 — 14.6
21	13.7.1
22.	~~12.8.3~~ — ~~14.7.2~~ —
23.	12.8.3 — 14.7.2
24	14.8.2 — 14.8.2 —
25	14.8.3 — 13.8.4 — 15.8.2 —
26.	14.8.4 — 14.10.2 — 15.8.3 — 14.9.3 — 15.9.2
27	15.9.3 — 15.9.3 — 14.10.3.
28.	
29	
30	
31	15 : 11 : 5 —

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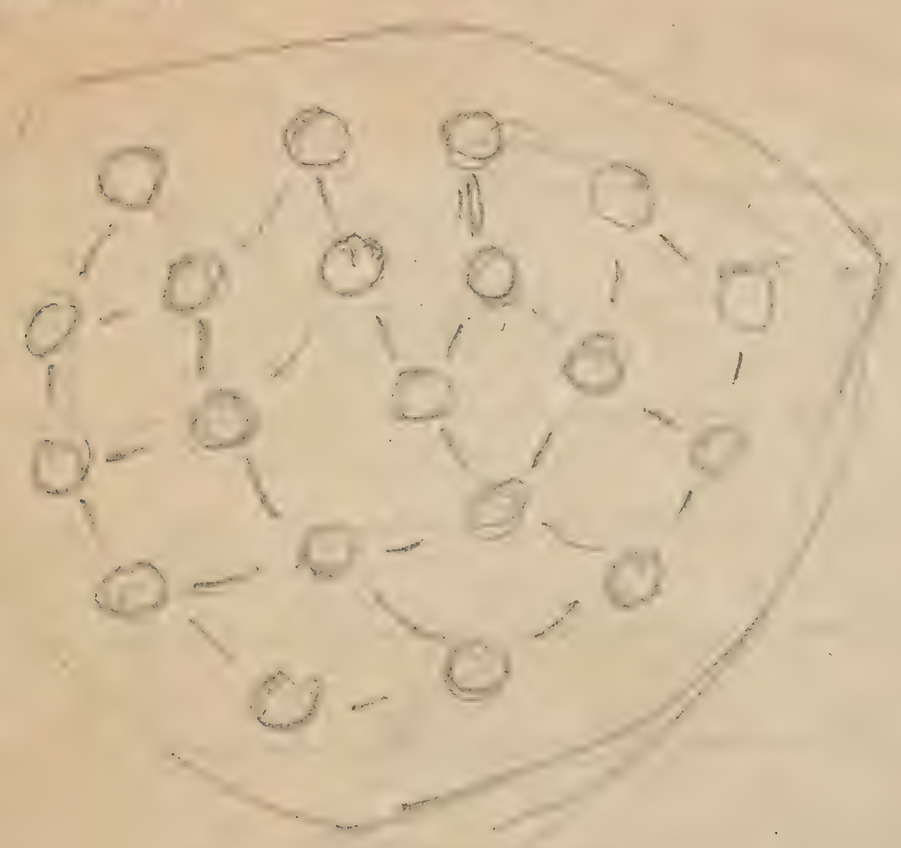

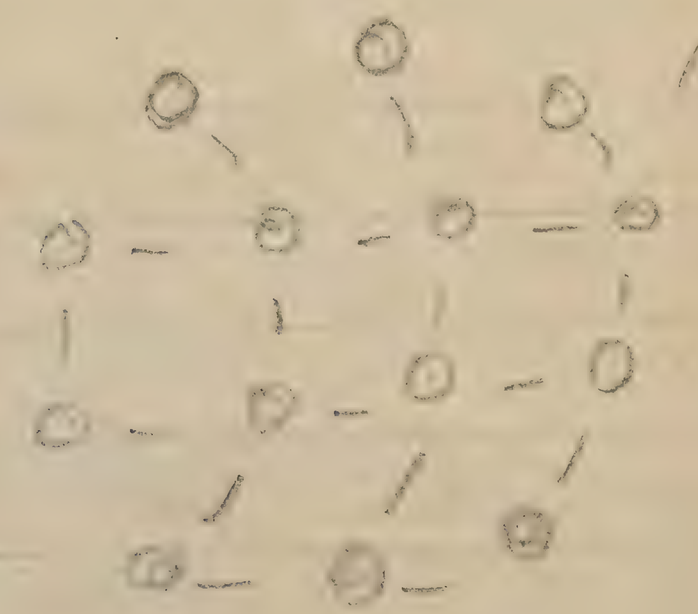

12. 13. 14. 16. 17 20 25

Ein 12 Carpellen fin 9 in einem Kreis 3 in 3 Zeilen

13	9	4
14	10	4
16	11	5
17	11	5 1 in dritter
20	12 14	7 6 1
21	13	7 1
24	14	8 2
25	13 15	8 4
26	15	8 3
27	15	9 3
31	15	11 5

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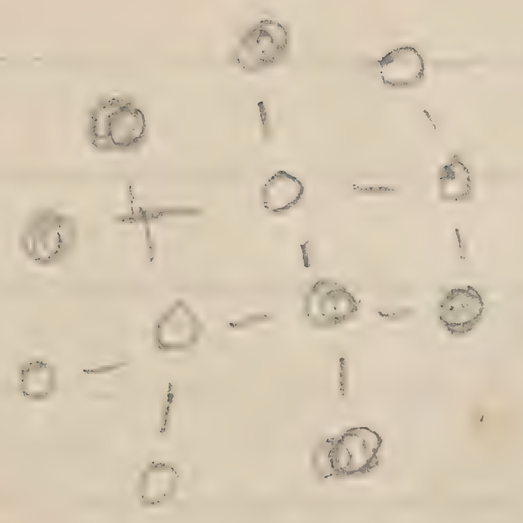

25

13
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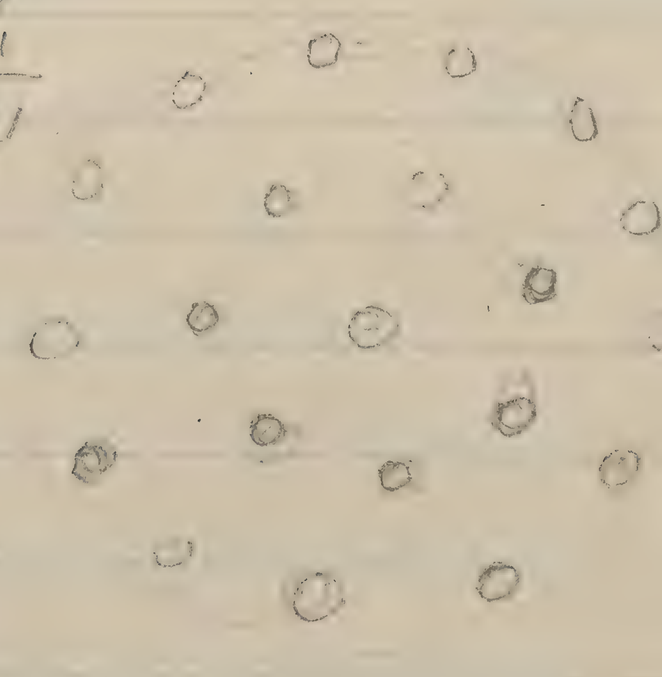
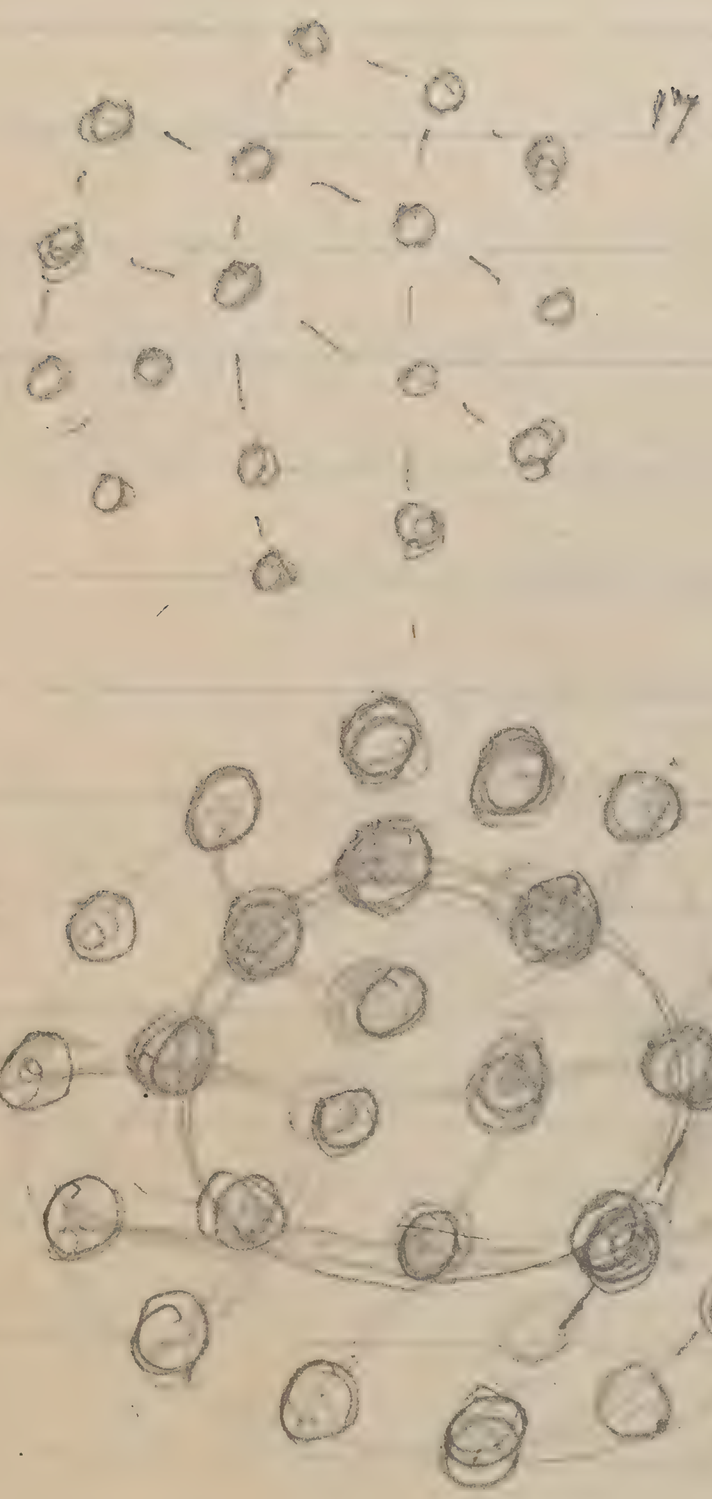
1
21



arrangement of cupels in a receptacle 1/3 line = diameter see tab. 43

17



ripe
15
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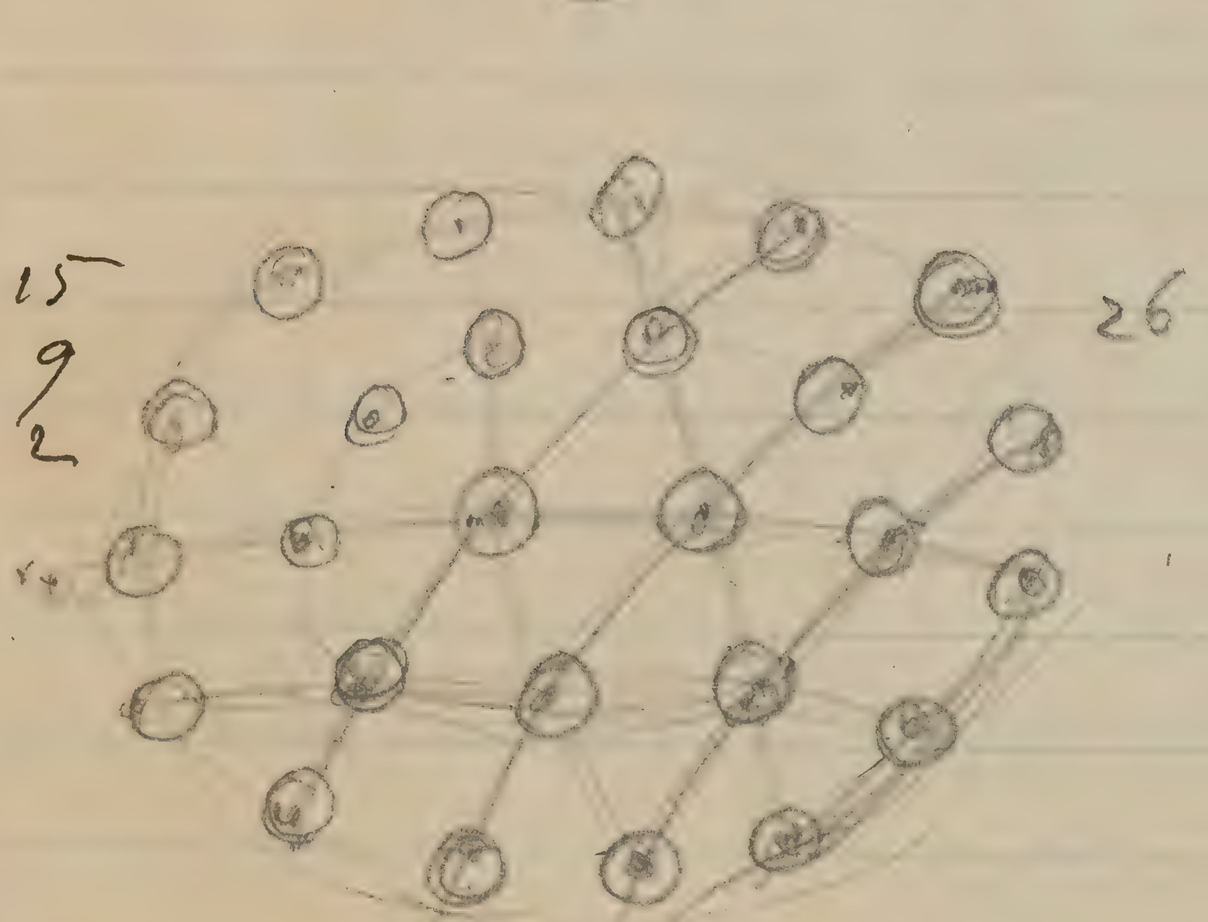

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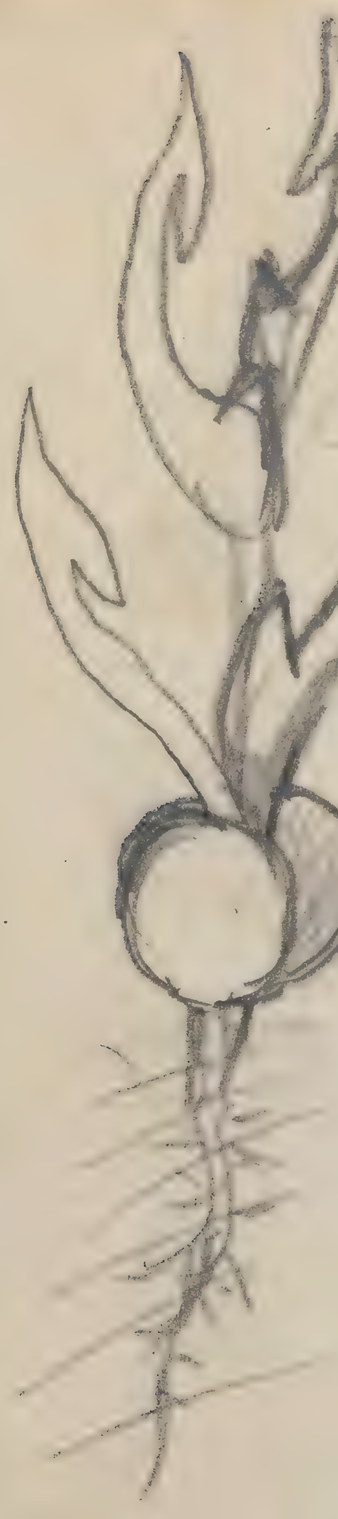

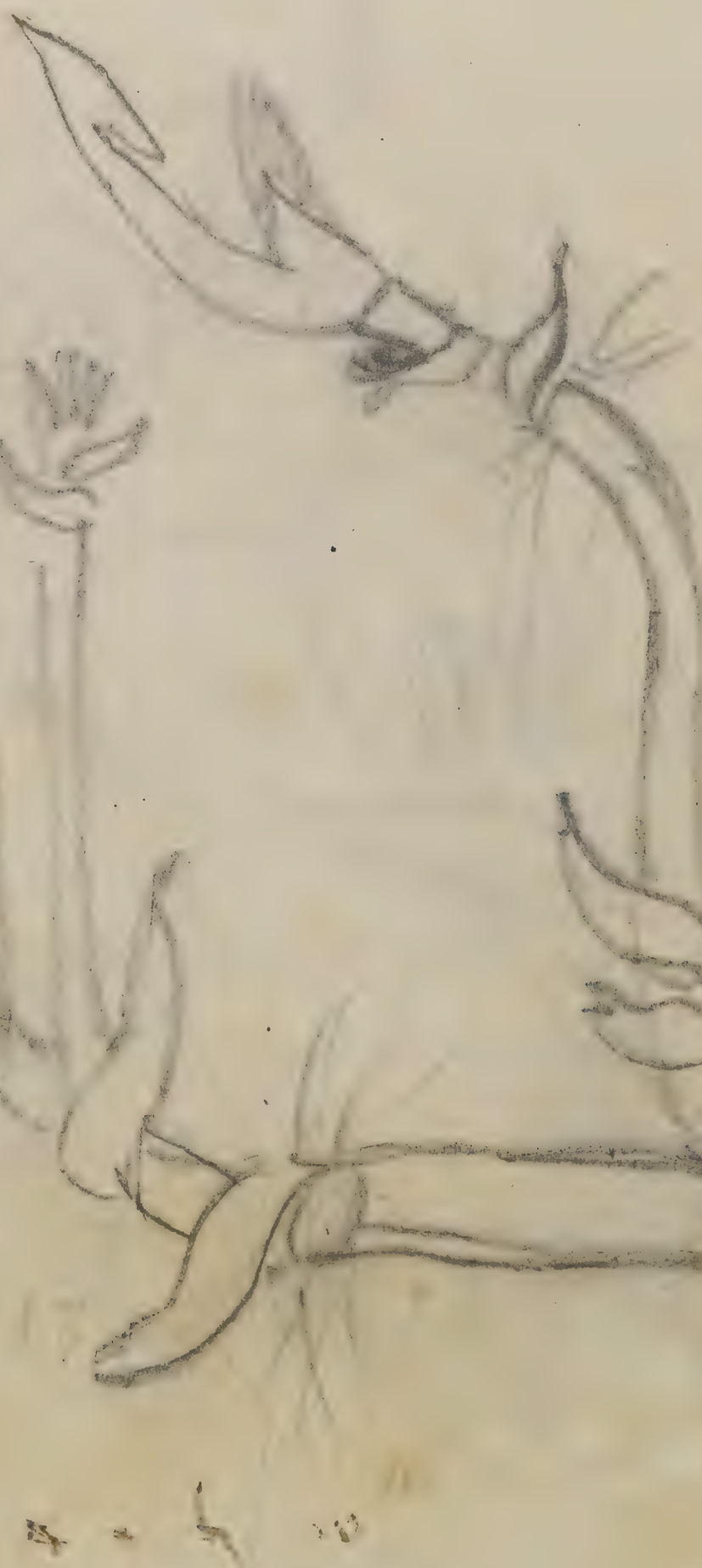

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